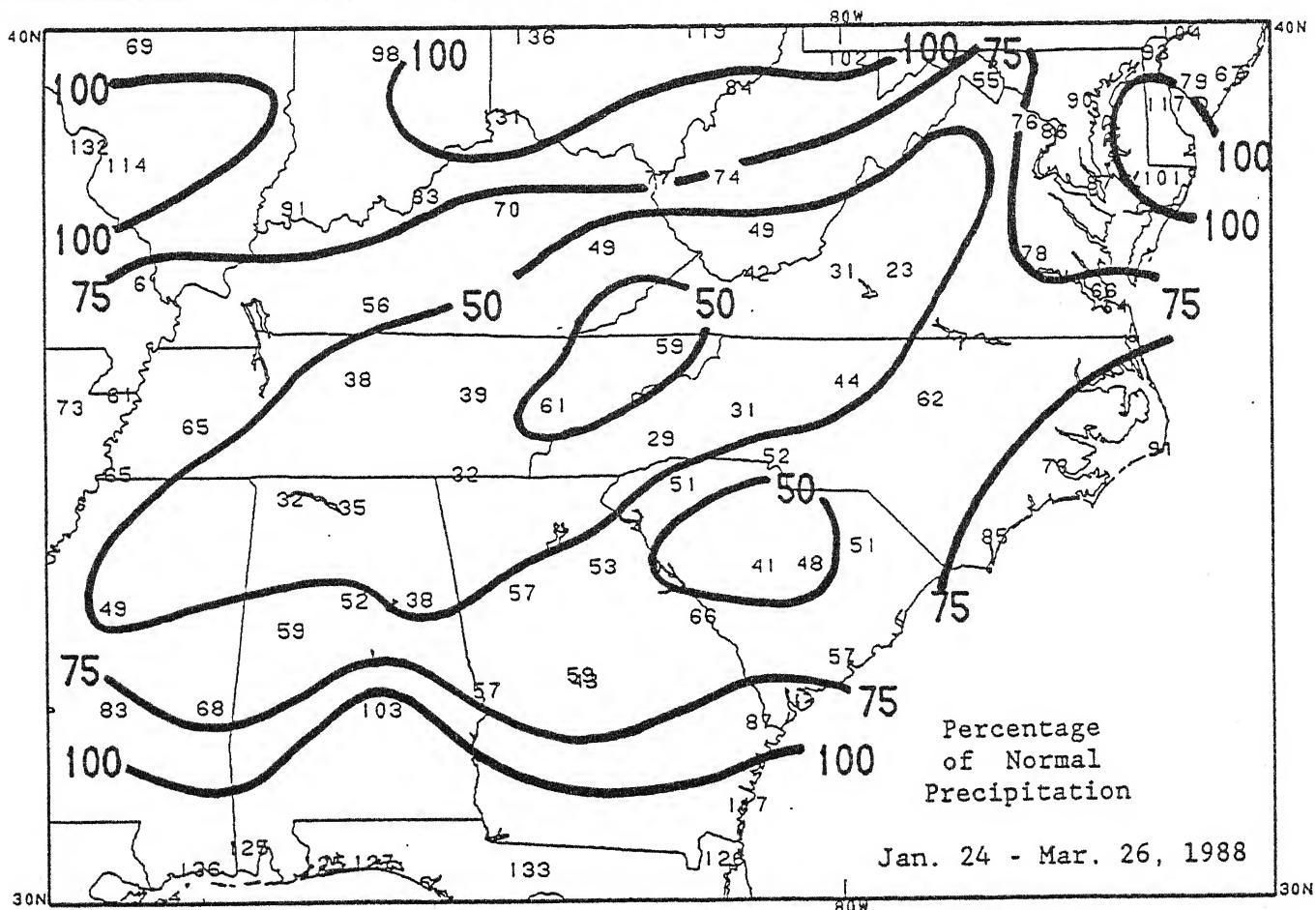


# WEEKLY CLIMATE BULLETIN

No. 88/13

Washington, DC

March 26, 1988



EVEN WITH LAST WEEK'S SHOWERS AND THUNDERSTORMS, MUCH OF THE SOUTHEAST HAS RECEIVED LESS THAN HALF OF THEIR NORMAL PRECIPITATION SINCE JAN. 24.

NOAA - NATIONAL WEATHER SERVICE - NATIONAL METEOROLOGICAL CENTER

## WEEKLY CLIMATE BULLETIN

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This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief, concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

Highlights of major global climatic events and anomalies.  
U.S. climatic conditions for the previous week.  
U.S. apparent temperatures (summer) or wind chill (winter).  
Global two-week temperature anomalies.  
Global four-week precipitation anomalies.  
Global monthly temperature and precipitation anomalies.  
Global three-month precipitation anomalies (once a month).  
Global twelve-month precipitation anomalies (every 3 months).  
Global temperature anomalies for winter and summer seasons.  
Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Center via the Global Telecommunication System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

To receive copies of the Bulletin or change mailing address, write to:

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# GLOBAL HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF MARCH 26, 1988  
(Approximate duration of anomalies is in brackets.)

1. WESTERN UNITED STATES AND SOUTHWESTERN CANADA: UNUSUAL DRYNESS EASES IN PACIFIC NORTHWEST BUT CONTINUES IN CALIFORNIA.

A series of storms dropped up to 259.1 mm (10.20 inches) of rain in the Pacific Northwest and ended the dryness there. Little or no precipitation occurred in California where dryness remained [10 weeks].

2. CENTRAL AND EASTERN UNITED STATES: DRYNESS PERSISTS.

Rainfall amounts were generally less than 8.8 mm (0.35 inch) in the central United States, 11.7 mm (0.46 inch) in New England, and 17.5 mm (0.69 inch) in the Southeast (see Special Climate Summary) [8 weeks].

3. EUROPE: UNUSUALLY WET CONDITIONS CONTINUE.

Heavy precipitation, as much as 248.6 mm (9.79 inches) in Switzerland, was measured across most of southern Scandinavia and central Europe [10 weeks].

4. ZIMBABWE, BOTSWANA, AND NORTHERN SOUTH AFRICA: AREA REMAINS WET.

Scattered showers brought up to 75.8 mm (2.98 inches) of rain in the region as unusually wet conditions persist [6 weeks].

5. BRAZIL, URUGUAY, AND ARGENTINA: HOT WEATHER CONTINUES.

High temperatures, up to  $6.9^{\circ}\text{C}$  ( $12.4^{\circ}\text{F}$ ) above normal, prevailed across much of southern Brazil, Uruguay, and Argentina [3 weeks].

6. NORTH CENTRAL AUSTRALIA: REGION STILL DRY.

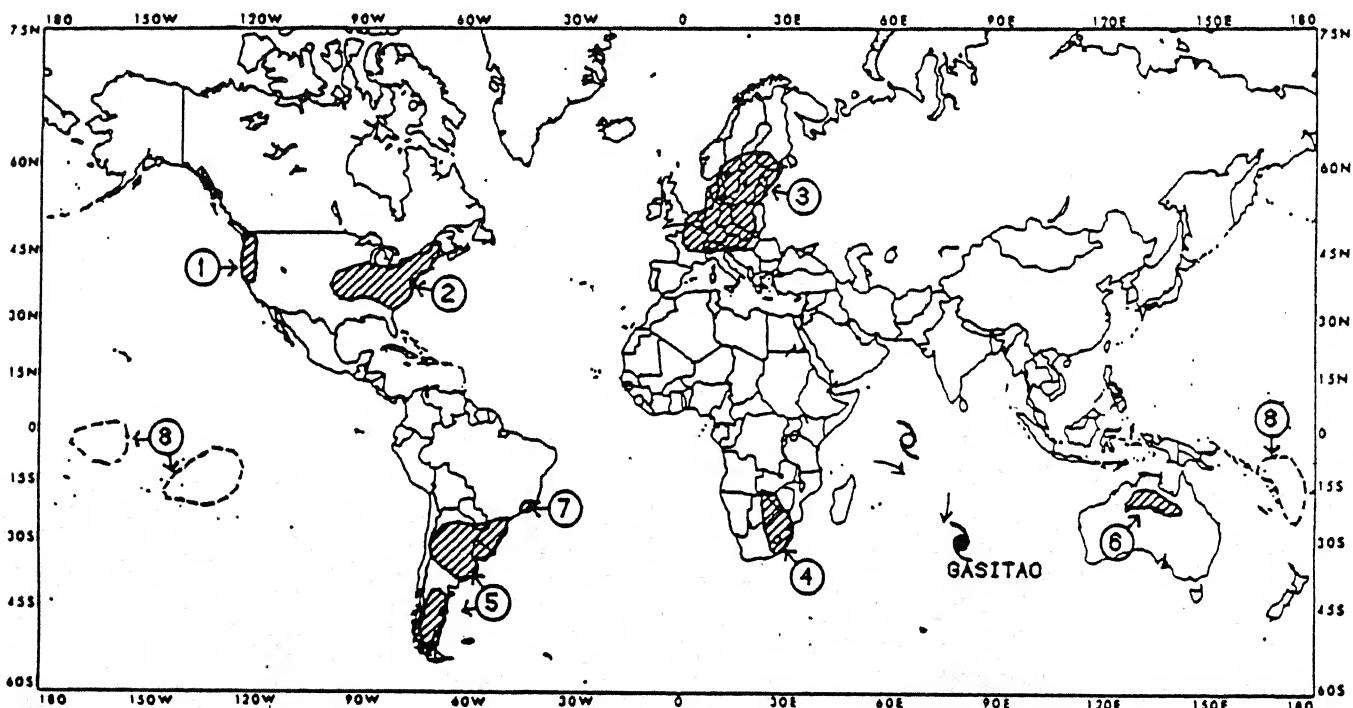
Little or no rain, generally less than 23.0 mm (0.91 inches), occurred in the interior of north central Australia [8 weeks].

7. BRAZIL: WETNESS ALONG SOUTHEAST COAST ENDS.

Little or no precipitation fell along the southeast coast of Brazil [Ended at 5 weeks].

8. CENTRAL AND EASTERN TROPICAL PACIFIC: REFER TO FEBRUARY 1988 EL NINO/SOUTHERN OSCILLATION (ENSO) ADVISORY.

The areas of positive sea surface temperature anomalies above  $1^{\circ}\text{C}$  ( $1.8^{\circ}\text{F}$ ) have greatly diminished over the past few months. Regions above  $1^{\circ}\text{C}$  ( $1.8^{\circ}\text{F}$ ) during February 1988 are outlined. The March 1988 ENSO Summary will appear in the middle of April.



Approximate locations of the major anomalies and events described above are shown on this map. See the other world maps in this Bulletin for current two-week temperature anomalies, four-week precipitation anomalies, and (occasionally) longer-term anomalies.

# U.S. WEEKLY WEATHER HIGHLIGHTS

FOR THE WEEK OF MARCH 20 THROUGH MARCH 26, 1988

Much-needed precipitation was welcomed in the abnormally dry Pacific Northwest as a series of storms brought copious amounts of rain and high winds to coastal regions of northwestern Oregon and western Washington, while heavy snows blanketed the higher elevations. According to the River Forecast Center, maximum totals ranged from 6.3 inches along Washington's coast, 9.0 inches in northwestern Oregon, and up to 10.2 inches in the northern Cascades. Farther east, scattered showers and thunderstorms dropped heavy rains on portions of the Southeast and East Coast, where up to ten inches fell in southwestern Mississippi (see Table 1). Light to moderate amounts occurred in the Pacific Northwest interior, the northern Rockies and most of the northern Great Plains, and in much of the country east of 95°W. The Southwest, Great Basin, central and southern Rockies, southern half of the Great Plains, coastal South Carolina, and parts of Florida received little or no precipitation last week.

Much of the nation experienced

unusually mild, and in some instances, hot weather during the first week of Spring (see Figure 1). Several cities broke previous daily maximum temperature records, especially in the Southwest, as readings in the mid to upper nineties were common in southern California and Arizona. Southerly winds pushed temperatures into the seventies and eighties across the Great Plains, Midwest, and New England, where many locations also set daily record high temperatures. Departures of 12-14°F above normal were reported in the Southwest and from Montana southeastward into Missouri (see Table 2). However, earlier in the week, cold air covered much of the eastern U.S. and many cities established daily record low temperatures, most notably Marquette, MI with -15°F on March 21 (see Figure 2). Warm weather returned later in the week, but in most of Florida, northern New England, and the northern Great Lakes' region, temperatures averaged slightly below normal. In Alaska, cold air settled over the northern and western parts of the state with weekly departures as great as -12°F (see Table 3).

TABLE 1. Selected cities with two or more inches of precipitation for the week.

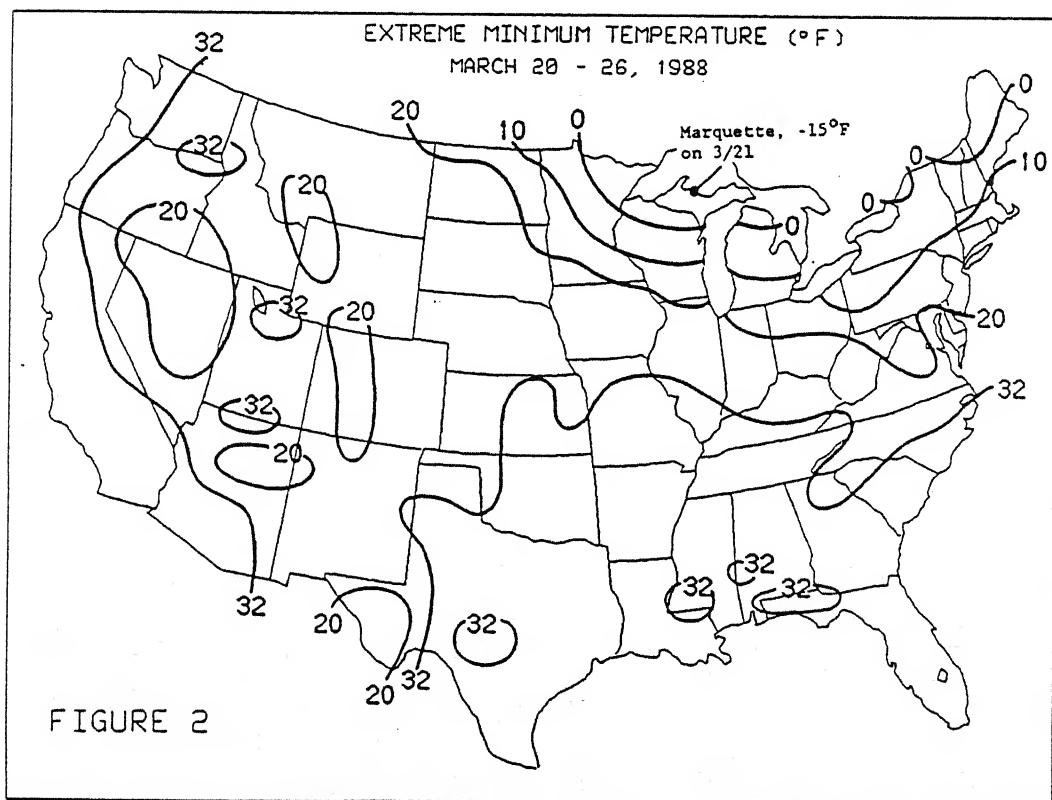
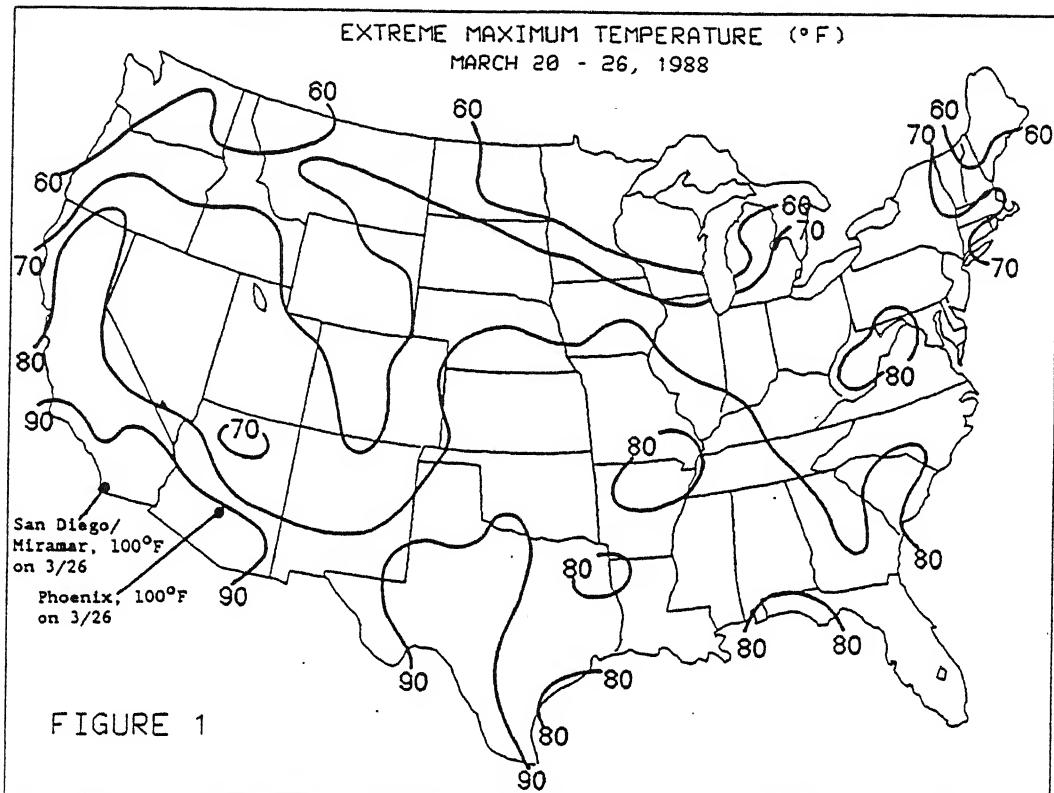
McComb, MS	10.03	Mobile, AL	2.89
Quillayute, WA	6.32	Seattle/Tacoma, WA	2.55
Astoria, OR	4.78	Eugene, OR	2.35
Hilo, HI	4.75	Pensacola, FL	2.32
Tacoma/Ft. Lewis, WA	3.58	Dover AFB, DE	2.11
Olympia, WA	3.41	Annette Island, AK	2.08
Tacoma/McChord, WA	3.25	Providence, RI	2.08

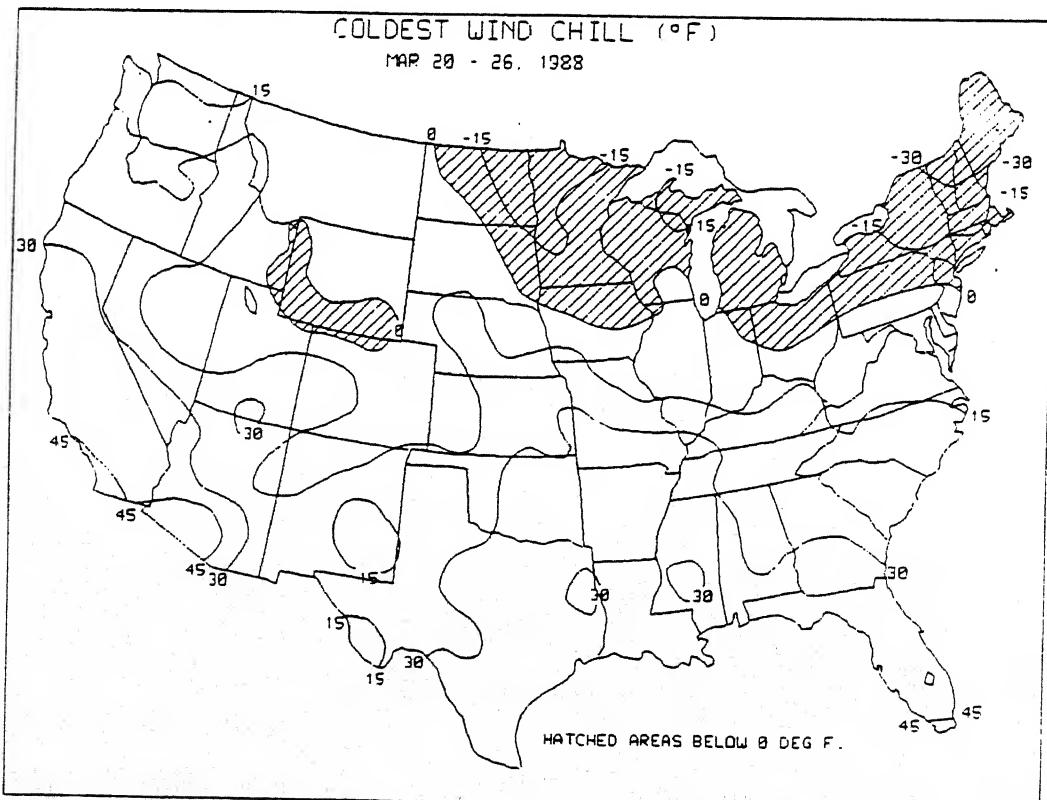
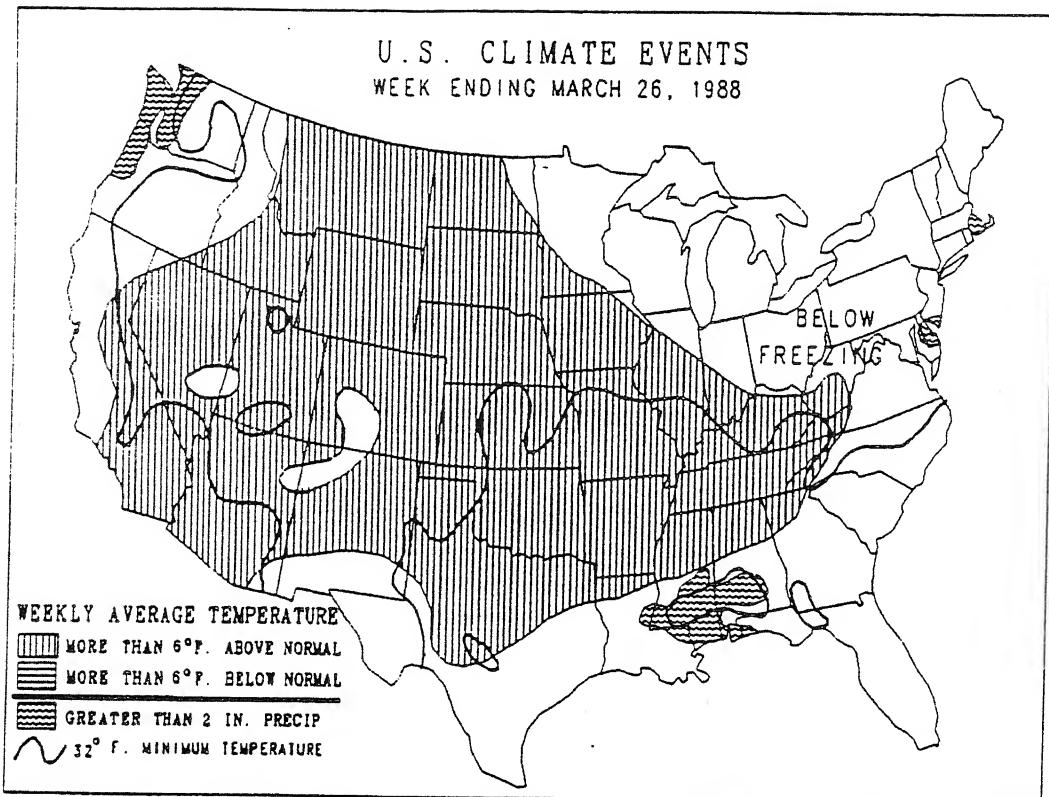
TABLE 2. Selected cities with temperatures averaging greater than 11°F ABOVE normal for the week.

Rolla/Vichy, MO	+14	Colorado Springs, CO	+12
Miles City, MT	+14	Concordia, KS	+12
Phoenix, AZ	+13	Goodland, KS	+12
San Bernardino, CA	+13	Russell, KS	+12
Belleville/Scott AFB, IL	+13	Salina, KS	+12
Joplin, MO	+13	Cut Bank, MT	+12
Kansas City, MO	+13	Great Falls, MT	+12
Billings, MT	+13	Lewiston, MT	+12
Bozeman, MT	+13	Lincoln, NE	+12
Glasgow, MT	+13	Norfolk, NE	+12
Havre, MT	+13	North Platte, NE	+12
Grand Island, NE	+13	Sidney, NE	+12
Clovis, NM	+13	Dickinson, ND	+12
Sheridan, WY	+13	Rapid City, SD	+12
Akron, CO	+12	Worland, WY	+12

TABLE 3. Selected cities with temperatures averaging greater than 6°F BELOW normal for the week.

St. Paul Island, AK	-14	Big Delta, AK	-8
Kotzebue, AK	-12	McGrath, AK	-8
Aniak, AK	-11	Barrow, AK	-7
Bethel, AK	-11	Barter Island, AK	-7
Unalakleet, AK	-11	Bettles, AK	-7
Wainwright, AK	-9	Cold Bay, AK	-7

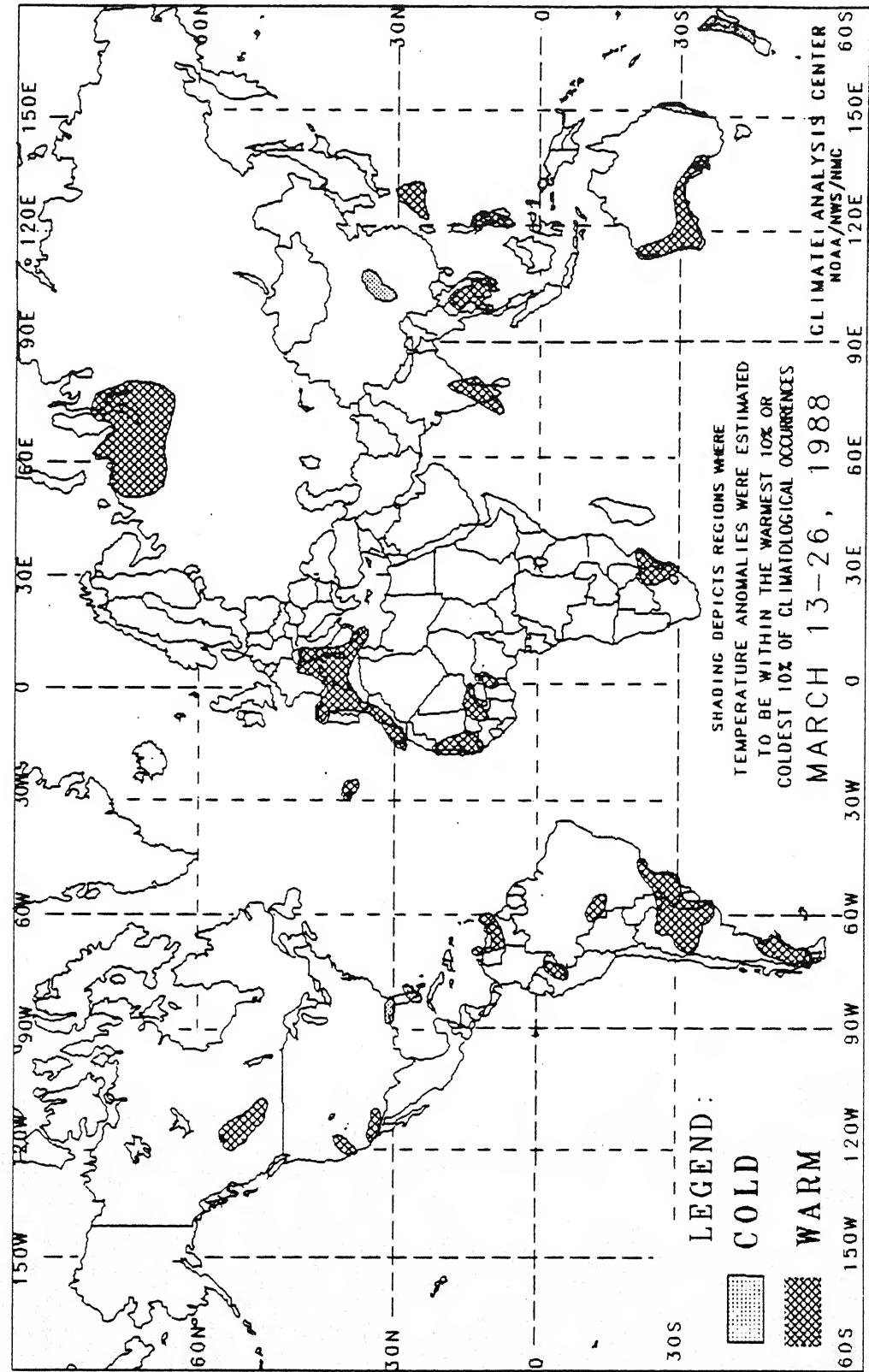




Cold air invaded the north central and northeastern United States early and late in the week, but wind chills below  $-30^{\circ}\text{F}$  were limited to northern New England.

# GLOBAL TEMPERATURE ANOMALIES

2 week



The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

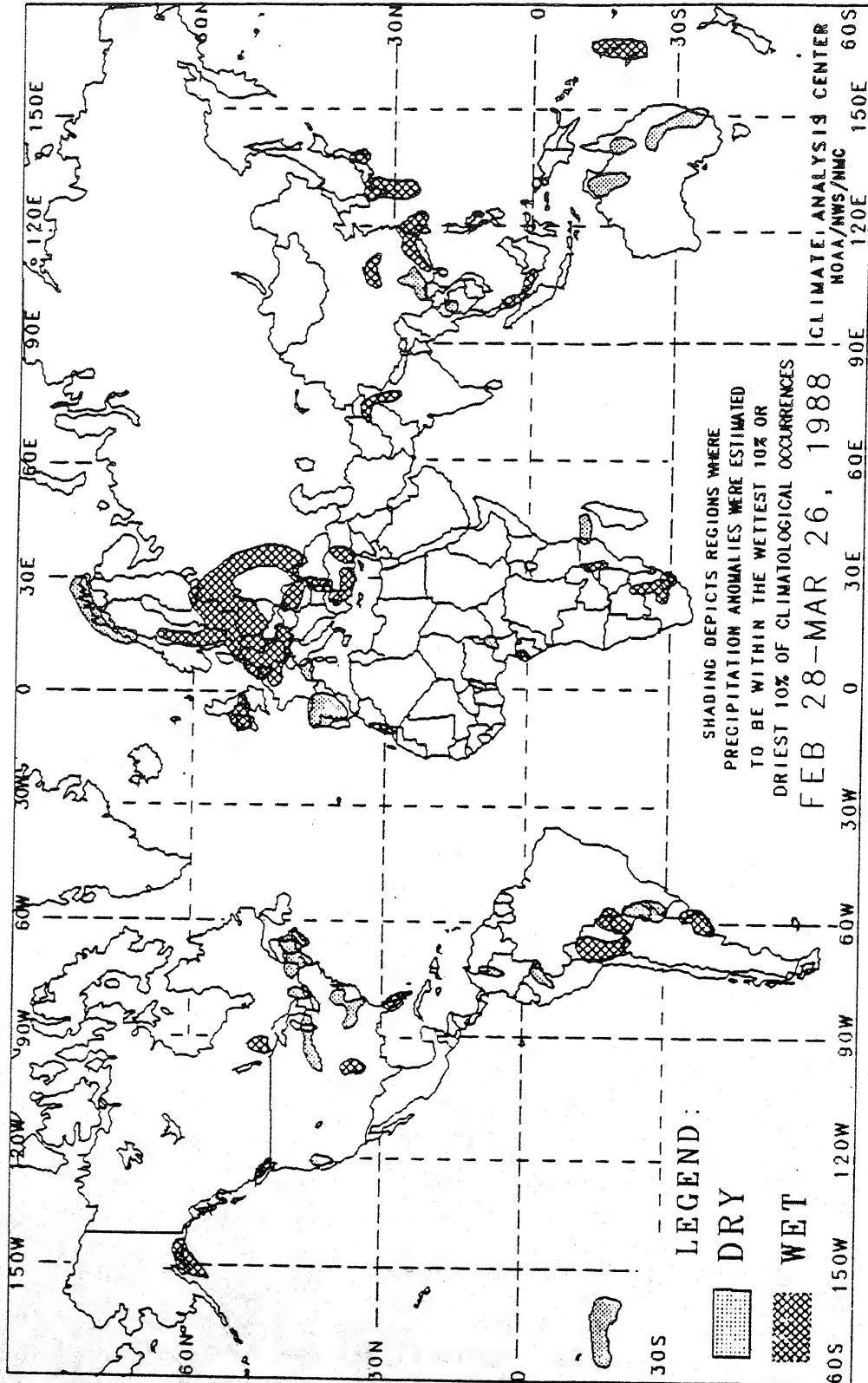
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

# GLOBAL PRECIPITATION ANOMALIES

## 4 Week



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

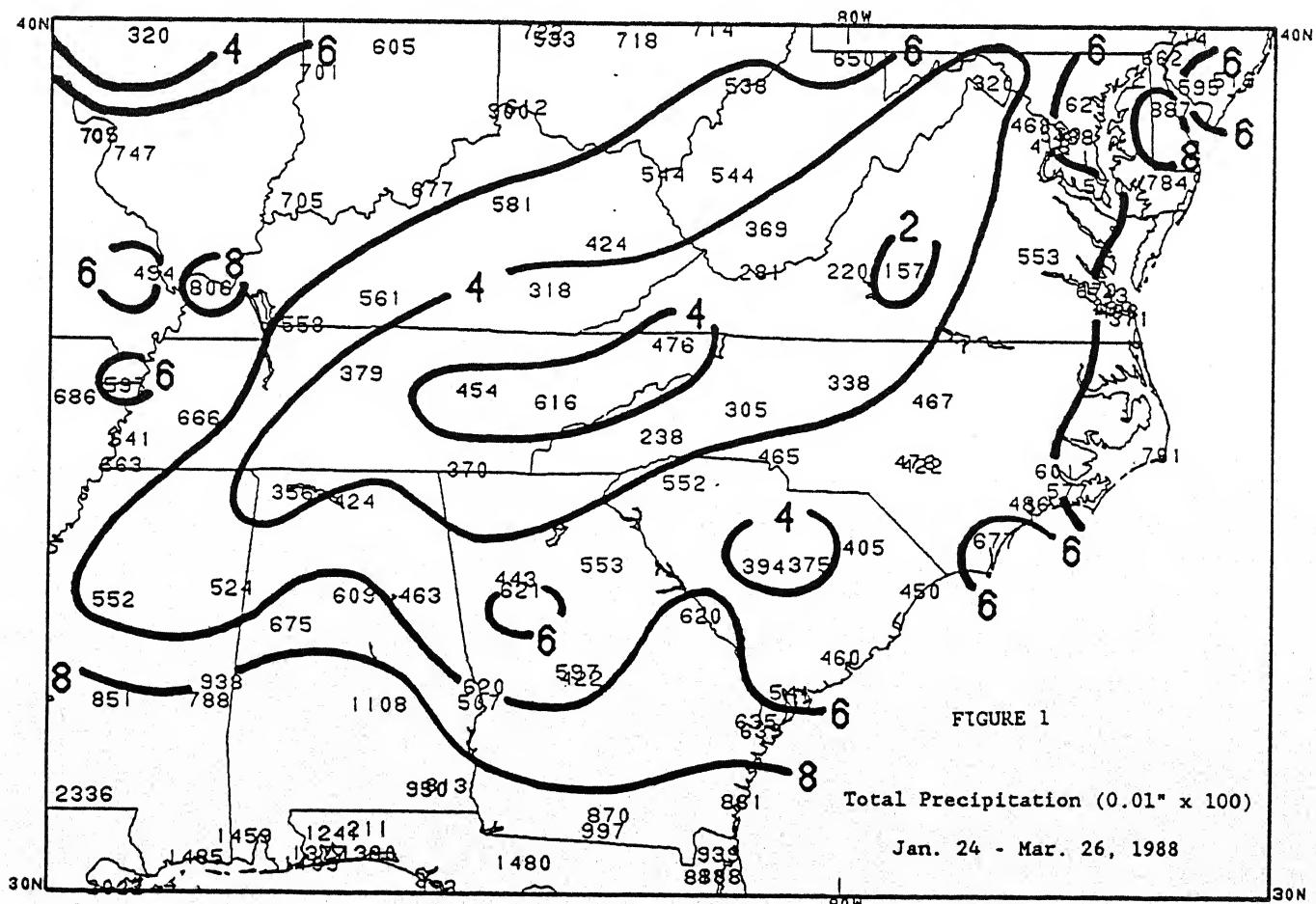
# SPECIAL CLIMATE SUMMARY

Climate Analysis Center, NMC  
National Weather Service, NOAA

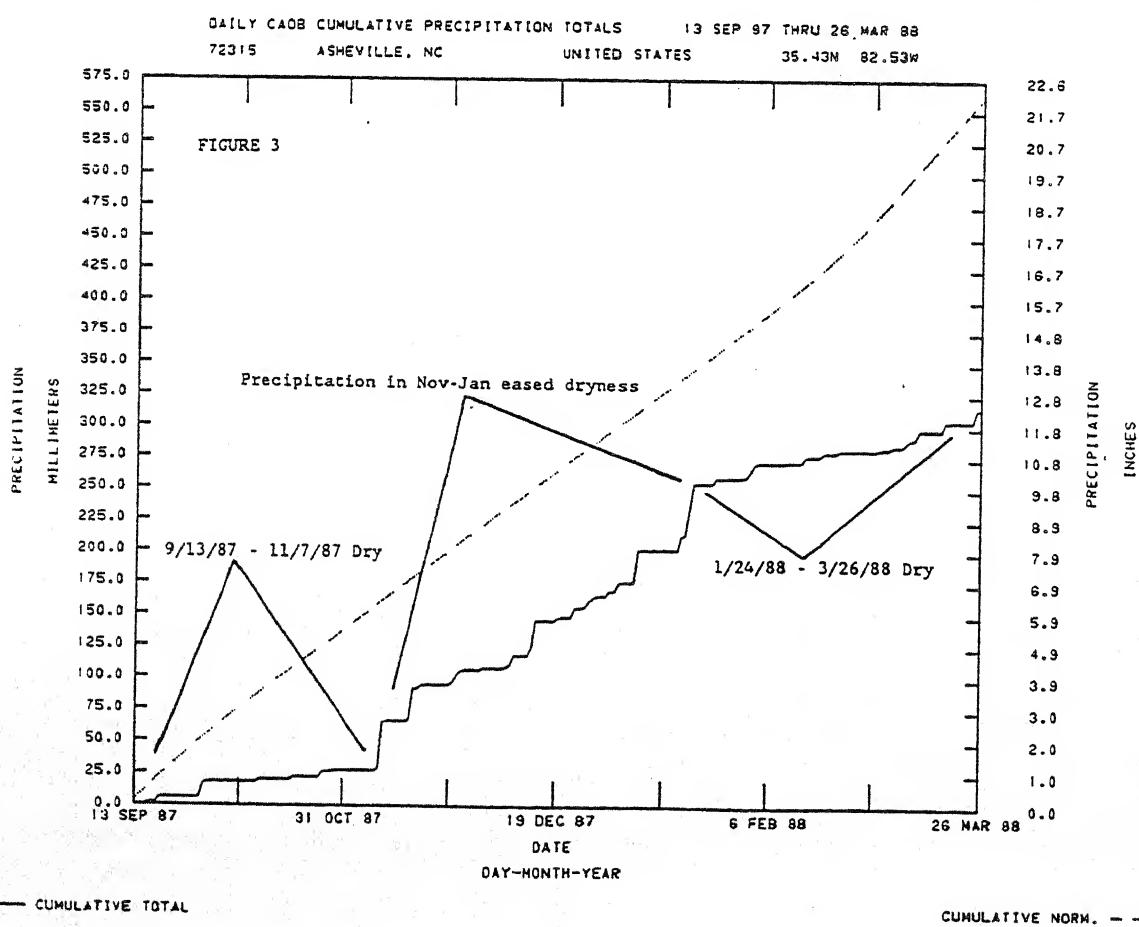
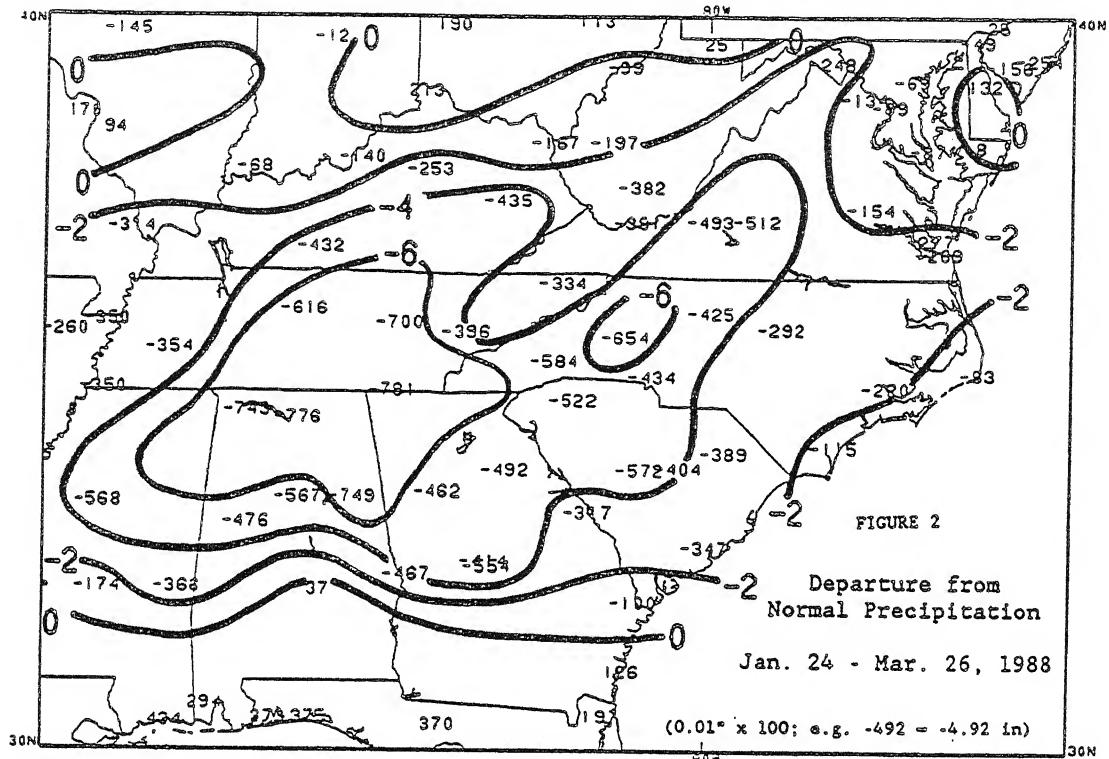
UNUSUALLY DRY WEATHER HAS AFFECTED MUCH OF  
THE SOUTHEAST DURING THE LAST NINE WEEKS.

Since January 24, most of the Southeast has measured less than half of their normal precipitation (see front cover). Totals during the period have ranged between two to four inches in the driest locations (see Figure 1). As a result, precipitation departures between four to eight inches (see Figure 2) are common from Mississippi and Tennessee eastward to South Carolina and northward into Virginia. The greatest deficits are in northern Alabama (Huntsville at -7.76 in), central Tennessee (Chattanooga at -7.81 in), and the western Carolinas (Hickory, NC at -6.54 in).

The recent lack of significant rainfall is of major concern as this region has experienced severe droughts during the last four years. In late 1984 and early 1985, the hardest hit areas included central Tennessee and Kentucky, southern Georgia and northeastern Florida, and parts of the Carolinas. The 1986 drought, one of the worst on record, afflicted a large portion of the Southeast as agricultural and other losses were estimated by various federal agencies in the several hundreds of millions of dollars. More recently, abnormally dry conditions in mid-September to early November, 1987 contributed to the region's most destructive autumn forest fires since 1964. Heavy precipitation in November brought relief to the area, but through March 26, large deficiencies still remain from mid-September (see Figure 3).



The magnitude and extent of the dry conditions within the past year are demonstrated in Figures 4 and 5. Based upon values of the Palmer Drought Index, additional precipitation between five to ten inches are necessary to bring the Palmer Index to zero (near normal soil moisture content). Significant rainfall is needed soon to ease both long and short term moisture deficiencies, especially with the start of Spring and the beginning of the planting season.



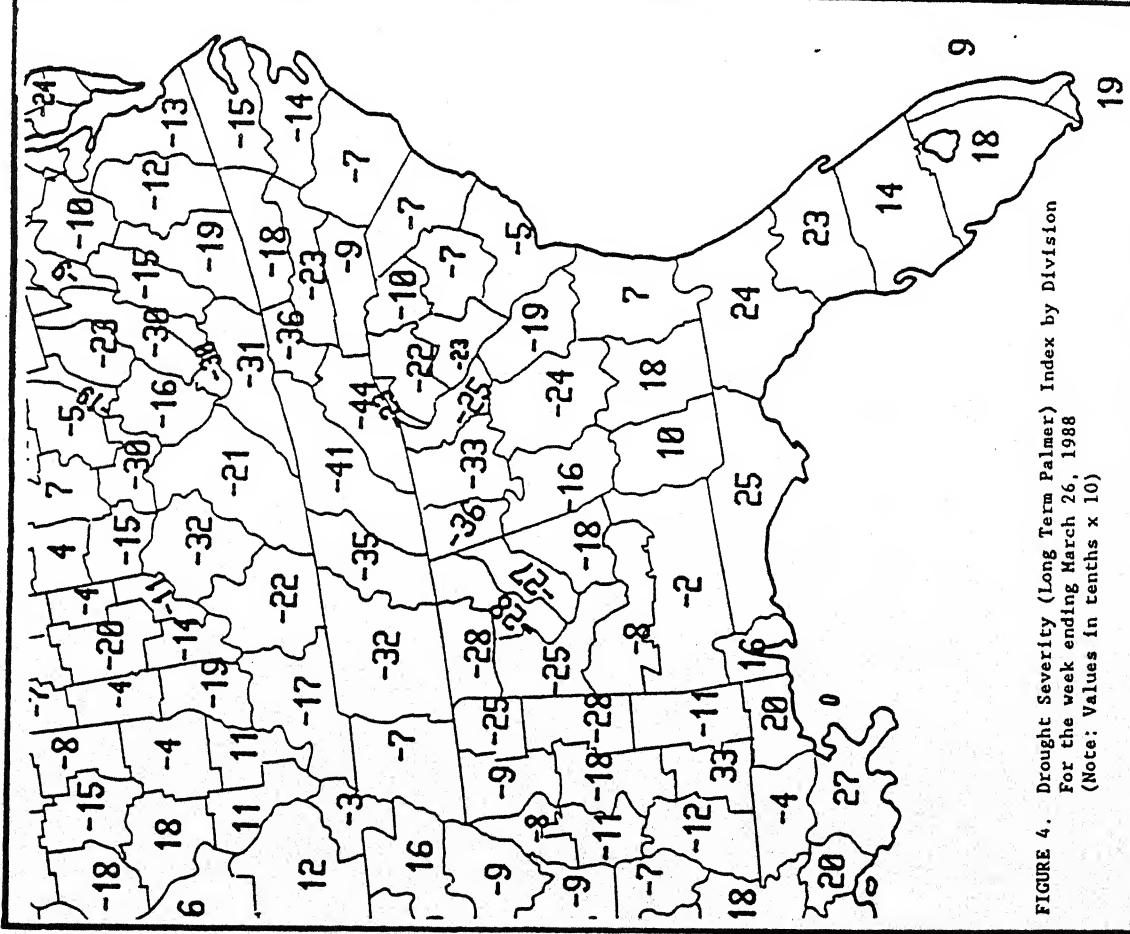


FIGURE 4. Drought Severity (Long Term Palmer) Index by Division  
 For the week ending March 26, 1988  
 (Note: Values in tenths  $\times 10$ )

(Note: Values in 0.1 inches x 10; e.g. 101 = 10.1 inches)

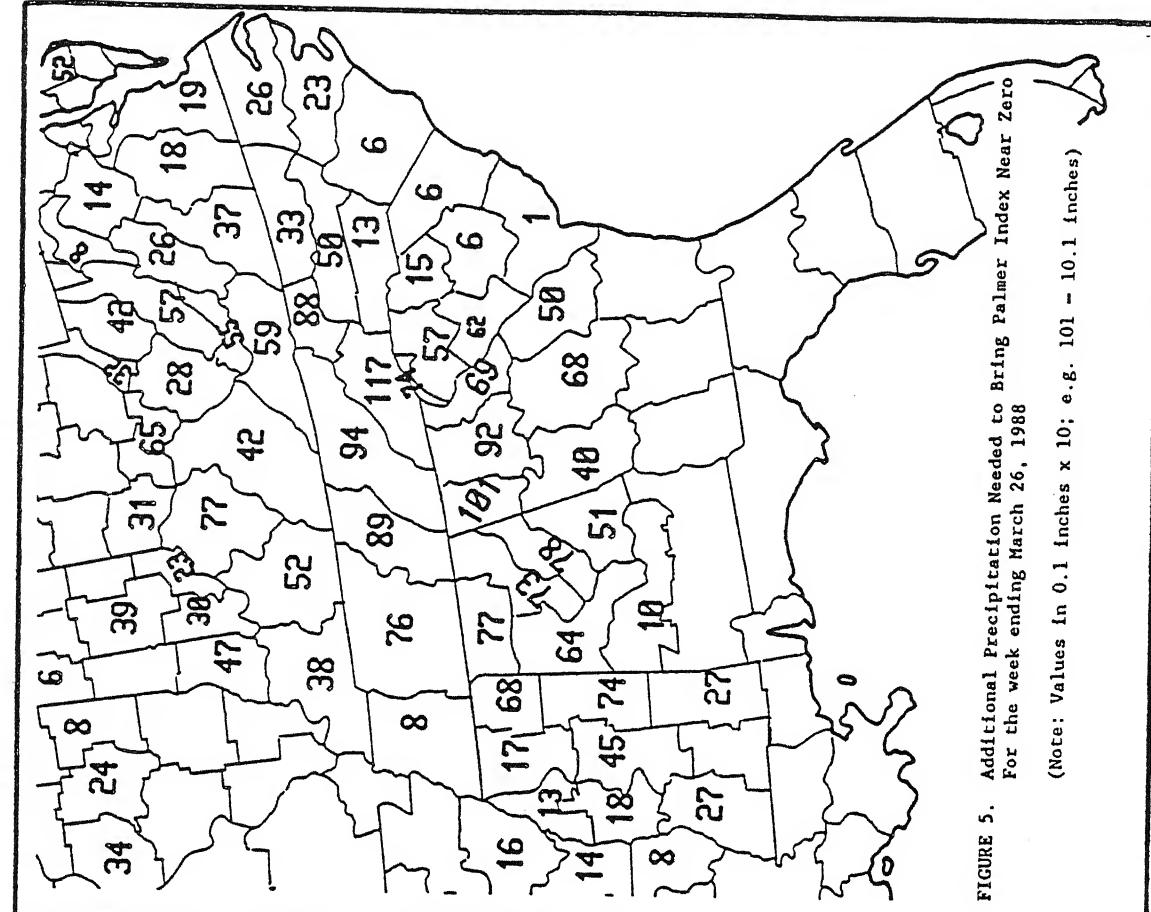


FIGURE 5. Additional Precipitation Needed to Bring Palmer Index Near Zero  
For the week ending March 26, 1968

For a brief explanation of both the Palmer Drought Index (Figure 4) and Additional Precipitation Needed to Bring Palmer Index Near Zero (Figure 5), refer to the following page.

### The Drought Severity (Long-Term, Palmer) Index

The Drought Severity, or Palmer, Index is an index of meteorological drought (or moisture excess) and indicates prolonged abnormal conditions affecting water-sensitive economics. The index usually ranges from -6 to +6, with negative values denoting dry spells and positive values indicating wet spells of weather (categories of values are given below). The equations for the index were derived from monthly average data and based on the concept of a balance between moisture supply and demand (Palmer, 1965). The equations have been modified to compute the index on a weekly basis. Input data consists of weekly temperature averages and precipitation totals for 350 climate divisions in the contiguous United States and Puerto Rico.

Above +4.0	Extreme Moist Spell	Below -4.0	Extreme Drought
+3.0 to +3.9	Very Moist Spell	-3.0 to -3.9	Severe Drought
+2.0 to +2.9	Unusual Moist Spell	-2.0 to -2.9	Moderate Drought
+1.0 to +1.9	Moist Spell	-1.0 to -1.9	Mild Drought
+0.5 to +0.9	Incipient Moist Spell	-0.4 to -0.9	Incipient Drought
+0.4 to -0.4	Near Normal		

### Additional Precipitation Needed to Bring the Drought Index to Near Zero.

A parameter derived from the calculations of the Drought Severity Index is the additional precipitation in inches needed to bring the index near zero. This parameter is computed for all values of the current week's index less than -0.5 (the upper limit of an incipient drought) and left blank for all values greater than or equal to -0.5. The precipitation values are theoretically the additional amounts required to end the drought defined by the index in each climatic division. In using this parameter to make projections, it must be realized that these values are instantaneous, valid only for the current week. To end the drought in a given climatic division for the oncoming week, the precipitation amount listed plus near-normal rainfall must occur.

(Note: Both articles taken from the Weekly Weather and Crop Bulletin dated April 21, 1987).

